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CONSPECTUS GENERIS AMORPHAE

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In reviewing the genus Amorpha for my *Illustriertes Handbuch der Laubholzkunde*, I had the opportunity of looking over the forms of this small but variable genus, for Professor TRELEASE had kindly sent me the rich collection of the Herbarium of the Missouri Botanical Garden. I am very much indebted to him for his great assistance to me in all my dendrological studies.

In SMALL'S *Flora S. E. United States*, F. E. BOYNTON has published a good synopsis of most of the species of the genus, but there seem to me to be some errors of statement arising from a failure to clear up some of the descriptions of the older European and American authors. I take this opportunity, therefore, to refer to some points concerning which I think BOYNTON has taken a wrong view.

CLAVIS ANALYTICA SPECIERUM

1a. Foliola infima proxime super basin subdilatatam petiola adnata ramo valde approximata fere pseudostipulosa. 2.

1b. Foliola infima distincte paulo superius rhachi adnata a ramo plus minusve distantia. 3.

2a. Calycis dentes omnes fere aequilongi, tubo paullo breviores; foliola 15–51, subsessilia, ovato-oblonga vel oblongo-elliptica, basi rotunda, apice fere semper subacuta, valde approximata; planta omnibus partibus albo-canescens 2. *A. canescens*

2b. Calycis dentes diversi, superiores breviores et paullo obtusiores (sed satis variabiles); foliola distinctius petiolulata, elliptica vel anguste-elliptica, basi semper apice plerumque rotunda; planta haud distincte denseque canescens sed plus minus pubescens; interdum subglabrescens . . . . 1. *A. herbacea*

3a. Folia minus quam 10^{cm} longa; foliola 15–35, brevepetiolulata, anguste-elliptica vel elliptica, utrinque rotunda vel subrotunda, $6–13^{mm}$ longa et $2.5–7^{mm}$

lata; calycis dentes omnia subacuminata, superiores paullo breviores, inferiores tubo fere subaequilongi; petala obovata, apice leviter emarginata, basi in unguem brevissimum contracta; fructus dorso fere recti nec non recurvati 4–5^{mm} longi, glanduloso-verrucosi; planta adulta omnibus partibus glabriuscula . . . . 3. *A. microphylla*

3b. Folia longiora; foliola majora vel planta ceteris signis diversa. 4.

4a. Foliorum rhaches ramulique juniores glanduloso-hispiduli (*i. e.* glandulis pedicellatis aculeiformibus sparsis obtecti); calycis dentes subacuminati, subaequilongi, tubo fere paullo longiores . . . . 5. *A. hispidula*

4b. Glandulae pedicellatae semper deficientes. 5.

5a. Foliola pro genere permagna, vix minus quam 3.5–4^{cm} longa, pagina inferiora nervis lateralibus distincte elevatis, canescentia, subcoriacea; planta ramis junioribus rhachibusque foliorum et inflorescentiarum dense tomentosa 14. *A. paniculata*

5b. Nervi laterales foliorum subtus non vel vix elevati vel planta partibus indicatis haud tomentosa. 6.

6a. Calycis dentes brevissimi et obtusissimi, multo latiores quam longi; petala fere orbicularia, basi brevissime unguiculata; folia ad 20^{cm} longa; foliola 9–19, ovata, ovato-elliptica vel late elliptica, basi rotunda vel subrotunda, apice obtusa vel leviter emarginata, terminalis ad 6×3^{cm} magna; fructus dorso recti, 7–8^{mm} longi, sparse glanduloso-verrucosi; planta fere omnibus partibus glaberrima . . . . 7. *A. glabra*

6b. Calycis dentes semper distincti, acuti vel planta ceteris signis diversa. 7.

7a. Calycis dentes omnes fere aequilongi distincte acuminati, tubo sublongiores; folia 10–15^{cm} longa; foliola 13–21, valde approximata, marginibus se integentia, ovato-elliptica vel elliptica, basi rotunda, apice rotundata vel obtusa, vix emarginata, mucrone brevi instructa, 2.5–3.6^{cm} longa et 1.2–1.7^{cm} lata, brevi-petiolulata, nervis lateralibus subtus subelevatis; fructus (an maturi?) dorso, ut videtur, recti, 0.5^{mm} longi, glanduloso-verrucosi; planta omnibus partibus subtomentella . . . . 4. *A. Schwerini*

7b. Calycis dentes diversi, superiores breviores et nondum acuminati vel foliola semper conspicue remota, marginibus inter se non contingentia. 8.

8a. Folia 7–16^{cm} longa; foliola 10–33, elliptica vel anguste-elliptica, utrinque rotundata, pleraque levissime emarginata, mucronulata, breve sed distincte petiolulata, 7×5^{mm} ad 17×7^{mm} vel 15×5^{mm} magna, fere subcoriacea; dentes calycis superiores subacuti, inferiores subacuminati longiores; fructus dorso recti, 0.5^{mm} longi, glanduloso-verrucosi; planta omnibus partibus glabriuscula sed inflorescentiis distinctius pubescentibus . . . . 8. *A. caroliniana*

8b. Foliola majora vel planta ceteris signis diversa. 9.

9a. Foliola satis magna, vix minus quam 1.5^{cm} lata, basi rotunda vel cordata, subcoriacea; fructus dorso fere recti vel ad apicem subito leviter recurvati. 10.

9b. Foliola distincte angustiora vel basi subacuta vel tenuiora membranacea vel fructus dorso manifeste recurvata (falcata!). 11.

10a. Foliola superne nitentia, plus minus duplo longiora quam lata, 2.2–4×

1.4–2^{cm} vel ad 6×2.5^{cm} magna; petala obovato-cordata, brevi-unguiculata, 6–7^{mm} longa; fructus maturi 7–9^{mm} longi; dorso ad apicem subito leviter recurvati, dense vel vix glanduloso-verrucosi . . . 12. *A. virgata* (et *A. nitens*)

10b. Foliolo superne haud nitentia, minus quam duplo longiora quam lata, 0.5×1.2 vel 2×1.5 ad 5×4 vel 5.5×3.5^{cm} magna; petala basi in unguem distinctum contracta; fructus dorso recti, 7^{mm} longi, glanduloso-verrucosi; planta omnibus partibus pubescentia vel glabriuscula

13. *A. laevigata* (et *A. texana*)

11a. Folia 9–20^{cm} longa; foliola 11–17, ovato-elliptica vel elliptica, basi late subacuta, raro manifeste rotundata, apice obtusa vel rotunda vel subacuta, 2.3–4×1.2–2.2^{cm} magna; petiolula ad 3^{mm} longa; petala obovato-oblonga, 0.5^{mm} longa; fructus 0.6^{mm} longi, vix (an semper?) glanduloso-verrucosi; planta adulta glabriuscula . . . . 6. *A. californica*

11b. Planta foliis vel fructibus vel signis ceteris diversa. 12.

12a. Fructus dorso fere recti plus minus distincte, 6^{mm} longi, glanduloso-verrucosi; folia 8–15^{cm} longa, foliola 12–31, anguste elliptica vel anguste ovato-lanceolata, utrinque rotundata, apice mucronulata, 12–18×6–8^{mm} magna, brevi-petiolulata; dentes calycis breves, superiores fere rotundi, inferiores acuti medio paullo longiore; petala obovata, brevi-unguiculata, 0.5^{mm} longa; planta omnibus partibus junioribus molliter pubescens, deinde glabriuscula

9. *A. tennessensis* (cf. etiam 10)

12b. Fructus manifeste falcata (dorso recurvata), fere semper longiora vel foliola latiora vel utrinque acuta. 13.

13a. Folia 9–20^{cm} longa; foliola 15–27, lanceolata, utrinque (praecipue basi) acuta vel apice subrotundata, mucronulata, 2–3.2×0.7–0.8 vel rarius ad 3×1.2–1.5^{cm} magna, distincte petiolulata; fructus maturi 6–7.5^{mm} longi; planta adulta satis glabriuscula, sed folia non glabra

10. *A. angustifolia* (cf. etiam 9)

13b. Folia ad 30^{cm} longa; foliola 11–25, plerumque majora, forma variabilis; fructus maturi 8–9^{mm} longi; planta pubescens vel adulta plerumque glabriuscula . . . . 11. *A. fructicosa*

In the following pages I shall comment upon each species and its forms and shall attempt to clear up its synonymy. It also seems best to cite all the specimens I have seen. Figures of most of the details of leaves, calyx, petals, and fruits will be found in my *Illustriertes Handbuch* 2: pt. 1. 1907.

1. A. HERBACEA Walt. Fl. Carol. 179. 1788.—*A pubescens* Willd. Berlin. Baumzucht 17. 1796; *A. pumila* Michx. Fl. Bor.-Am. 2:64. 1803.

Var. *a*. TYPICA.—Foliis majoribus, ad 25^{cm} longis; foliolis 15–37–35, ad 2.5×1.3^{cm} magnis.

NORTH CAROLINA.—Bladen Co., *Biltm. Herb.* no. 35, 9. ix. 96 and no. 35b, 20. vi. 97; Buncombe Co., *Biltm. Herb.* no. 35a, 9. vii. 98.

SOUTH CAROLINA.—Aiken Co., *H. Eggert*, 24. iii. 99.

GEORGIA.—Richmond Co., *H. Eggert*, 22. v. 99.

FLORIDA.—Sumter Co., *Curtiss*, no. 5414; *Tracy*, no. 6831 (locality unreadable).

Var. *β*. **Boyntoni**, var. nov.—Differt: foliis minoribus, ad 18^{cm} longis; foliolis valde approximatis, 33–70, tantum ad $18 \times 6\text{–}7^{mm}$ magnis.

GEORGIA.—Bulloch Co., *R. M. Harper*, no. 942.

FLORIDA.—Lake Co., *Hitchcock*, in the vicinity of Eustis, vi–vii 94; *G. V. Nash*, no. 1147; Pasco Co., *Curtiss*, no. 6664; Hernando Co., *Hitchcock*, vi–vii. 98; ad fl. St. John's *Rugel*, no. 166; ad ripas fl. Manatee, *Rugel*, no. 165.

A very graceful variety, with its numerous small leaflets, but apparently connected with the type by some intermediate forms, so that I do not venture to treat it as a species.

2. A. CANESCENS Nutt., Fraser Cat. 1813.

Var. *a*. TYPICA.—Foliolis apice plus minus distincte acuta vel subacuta, etiam adulta subtus cinereocani; inflorescentiis plerumque $12\text{–}15^{cm}$ longis.—Vidi specimina numerosissima ex regionibus subtus indicatis.

Saskatchewan, Dakota, Minnesota, Wisconsin, Nebraska, Iowa, Illinois, Missouri, Arkansas, Indian Territory, Texas (*Lindheimer*, vii. 42, dry prairies, Lynchburg), New Mexico (*Earle*, no. 205 ex parte, El Capitan Mts.; *Brandegee*, no. 12023, San Miquel Co.).

Var. *β*. GLABRATA Gray, Pl. Wright. 1:49. 1852. emend. (incl. var. *leptostachya* Engelm. apud Torr. and Gray, Pl. Fendl. 31. 1849. nom. nud. [sec. specim. orig.!]).—Differt: foliolis obtusioribus, utrimque fere aequaliter rotundatis, supra glabrescentia, subtus glabriuscula, viridescentia; inflorescentiis plerisque longioribus (ad 30^{cm}).

NEW MEXICO.—San Miquel Co., *Fendler*, no. 125.

MISSOURI.—Franklin Co., *Herb. Fritchey*, 16. vi. 86; *Bush*, no. 735. Ewan (?); *Dewart*, no. 69, Springfield.

This form is apparently connected with the type by the following specimens; *Earle*, no. 205 ex parte (New Mexico); *Lüders*, 1842, Franklin Co., Missouri; *Mead*, 1843, Augusta, Illinois.

A glabrescent form with very acute leaflets was collected by *Lapham*, 1843, Milwaukee, Wisconsin.

There is another remarkable form of the type with very large and obtuse leaflets (ad 2×1.3^{cm} magnis) of the lower leaves, from Watson, Missouri, *Bush*, no. 217.

3. A. MICROPHYLLA Pursh, Fl. Am. Sept. **2**:466. 1814.—*A. nana* Nutt. Gen. N. Am. Pl. **2**:91. 1818; nec Nutt. 1813 (*fide* Torr. et Gray, Fl. N. Am. **1**:690. 1840) non Sims 1820.

Vidi specimina numerosa ex Manitoba, Dakota, Minnesota, Iowa, Nebraska, et New Mexico (*Gordon*, no. 13, iv. 48, Upper Canadian River).

4. **A. Schwerini,** sp. nov.

NORTH CAROLINA.—Rowan Co., *J. K. Small*, 18–27. viii. 94, on Dunn's Mt. (fructibus semi-maturis).

With its very long acuminate calyx teeth, and its very approximate, rather large leaflets pubescent on both sides, this form seems to be a good but very local species.

5. A. HISPIDULA Greene, Fl. Francisc. **1**:14. 1891.—*A. californica* Hook. et Arn. Bot. Beech. Voy. 333. 1841, nec Nuttall apud Torr. et Gray.

CALIFORNIA.—Shasta Co., *H. E. Brown*, no. 232½, 15–18. v. 97; Ventura Co., *Elmer*, no. 3950; Monterey Co., *Elmer*, no. 3280; Sonoma Co., *Heller*, no. 5757; Los Angeles Co., *LeRoy Abrams*, no. 2622; *H. E. Hasse*, v. 92; Orange Co., *LeRoy Abrams*, no. 1828; San Bernardino Co., *G. Engelmann*, 21. ix. 80; *Parry* et *Lemmon*, no. 10811 (no. 97); *Parish*, nos. 3198 et 4185; *H. M. Hall*, no. 1288.

A very distinct species with its prickle-like glands. HOOKER and ARNOTT say (*l. c.*) "ramulis petiolisque glandulis rigidis acutis *aculeatis*;" while NUTTALL (apud Torr. et Gray) makes no mention of such glands and plainly says "teeth of the villous calyx all acute and *short*;" but it is somewhat strange that he also says "petioles furnished with *minute glandular* scales." Unfortunately I had no opportunity to see an original specimen of Nuttall from Santa Barbara, where *A. hispidula* seems to occur very frequently.

6. A. CALIFORNICA Nutt. apud Torr. et Gray, Fl. N. Am. **1**:306. 1838.

CALIFORNIA (southern).—San Francisco Mts., *Hall*, no. 2121; San Diego Co., *Orcutt*, near Jacumba valley, vi. 90; *LeRoy Abrams*, no. 3425; *Cleveland*, no. 1361, in 1874.

ARIZONA.—Santa Rita Mts., *Pringle*, 5. vi. 84; *Engelmann*, 27. ix. 80 (in the leaflets this specimen very much resembles *A. angustifolia*, but the rather glandless small fruits are quite the same as those of the Mexican plant); Fort Whipple, *E. Palmer*, no. 240.

NEW MEXICO.—Grant Co., *Metcalfe*, no. 133; Albuquerque, *Harward*, no. 12; Doña Ana Co., *Wooton*, no. 46.

MEXICO.—Chihuahua, *Pringle*, no. 1588 (Paso del Norte).

This species seems very nearly allied to *A. fruticosa* (and also to *A. angustifolia!*), but the fruits are smaller and only a little falcate. Unfortunately I saw only very few mature fruits, and I believe that the following forms may belong to *A. californica* rather than to *A. frutiosa;* some of them probably represent *A. laevigata* Boynton, but I never found a standard broader than long. For further comments see under *A. laevigata.*

TEXAS.—Lynchburg, *Lindheimer*, vii. 42; Comale Creek, *Lindheimer*, no. 335, vi. 45; without locality, *Lindheimer*, no. 38, in 1843; Gillespie Co., *Jermy;* Comanche Co., *Eggert*, 8. v. 00; Dallas Co., *Eggert*, 23. vi. 99 (the plant of 24. vi seems to be *A. angustifolia!*).

And with (?) the following:

ARKANSAS.—Fayetteville, *Harvey*, no. 19.

COLORADO.—Fort Collins, *Crandall*, 12. vi. 96; Denver, *Bisson*, no. 13a; Military Park, *E. C. Smith*, 26. vi. 91.

7. A. GLABRA Poiret, in Lam. Encycl. Suppl. **1**:330. 1810, nec Boynton.— ?*A. glabra* Desf. Cat. Hort. Paris 192. 1804 (*nomen nudum*) et Persoon, Syn. **2**:295. 1807 (*nomen nudum*); *A. montana* Boynton, Biltm. Bot. Stud. **1**:138. 1902.

NORTH CAROLINA (western).—Rutherford Co., *Rugel*, v. 41, in montibus ad Broad River; *Biltm. Herb.*, no. 14f, 10. v. 98; Polk Co., *Biltm. Herb.*, no. 14d, 31. v. 97; Biltmore, *Biltm. Herb.*, no. 14, 13. v et 29. viii. 96 et no. 14b, 2. vi. et 20. ix. 97.

TENNESSEE (eastern).—Knoxville, *A. Ruth.* no. 304.

POIRET (*l. c.*) gives a very clear description in French and the following short but satisfactory diagnosis in Latin: "Amorpha glabra, foliolis pedicellatis, obtusis; dentibus calycinis omnibus obtusis, brevissimis." BOYNTON and all other authors seem to have completely overlooked POIRET'S description. *A. glabra* also seems to be a very local species, like *A. Schwerini.*

8. A. CAROLINIANA Croom, Am. Jour. Sci. **25**:74. 1834 (confer etiam apud Torr. et Gray, Fl. N. Am. **1**:305. 1838).—*A cyanostachya* Curtis, Jour. Boston Soc. Nat. Hist. **1**:140. 1835 (1837), vidi specim. orig.; *A. glabra* Boynton, in Small Fl. S. E. United States 626. 1903.

NORTH CAROLINA (eastern).—Newborn, *Loomis* (*fide* Croom; spec. orig. non vidi!); Wilmington, *Curtiss* (vidi!)

GEORGIA.—Johnson Co., *R. M. Harper*, no. 1347; very similar also Lloyd Co., *Chapman Herb.*, no. 1322 (or 1522).

FLORIDA.—*Biltm. Herb.*, no. 5767; *Herb. Chapman* (this specimen has been named by BOYNTON *A. glabra* Desf.); there are also in Herb. Mo. Bot. Garden two sheets of *Herb. Chapman* no. 1524 without any other indication.

TEXAS.—Very similar are some small specimens from Columbia, *Bush*, nos. 962 and 1581.

A. caroliniana, as I understand it, is a very glabrous species, with leaflets relatively shorter and broader than those of *A. tennessensis* and *A. angustifolia;* but without very ripe fruits it is often difficult to say to what species such a form may belong. Only specimens collected in September have the fruits fully ripened.

9. A. TENNESSENSIS Shuttlw. in Kunze Delect. Sem. Hort. Lips. p. 1. adn. 1848, et in Linnaea **24**:191. 1851 (descript. non sufficiens); vide Boynton in Small Fl. S. E. United States 625. 1903.

TENNESSEE.—Prope Dandridge, *Rugel*, vi et ix. 42 (specim. orig., fructibus maturis dorso fere rectis!); Polk Co., *Biltm. Herb.*, no. 1381a.

It is not without some reservation that the following specimens are placed with this species:

NORTH CAROLINA.—Stanley Co., *Small*, 18. viii. 92.

FLORIDA.—John's Pass, *Tracy*, no. 7794.

ALABAMA.—Colliert Co., *Eggert*, 21. v. 99, Tennessee River near South Florence (foliis infimis cum foliolis ad 3×1.5^{cm} magnis!).

LOUISIANA.—Port Eads, *Tracy* et *Lloyd*, no. 176.

ARKANSAS.—Bertig, *Trelease*, 28. x. 97; Beaver Sta., *Glatfelter*, 18. vii. 98; *Herb. Engelmann*, no. 298, July 1835.

MISSOURI.—Jasper Co., *Trelease*, nos. 195 et 201. (in 1897).

ILLINOIS (southern).—Elsah, *Reed*, vi. 98. (an *A. fruticosa* var. *humilis* [Tausch] m. ?).

10. A. ANGUSTIFOLIA Boynton, Biltm. Bot. Stud. **1**:139. 1902.—*A. fruticosa* var. *subglabra* Gray, Jour. Bost. Soc. Nat. Hist. **6**:174. 1850.

A somewhat doubtful species, apparently connected with *A. fruticosa* (and probably also with *A californica*) by intermediate forms. BOYNTON cites as synonym *A. fruticosa* var. *angustifolia* Pursh, Fl. Am.-Sept. **2**:466. 1814, but I think it is very difficult to decide what form PURSH named var. *angustifolia* without having at hand his original specimens. He gives no other locality of his *A. fruticosa* than "Carolina and Florida." Concerning his *A. angustifolia* he remarks, "v. s. in Herb. Lewis." Probably the var. *angustifolia* of Pursh is the same as *A. humilis* Tausch, which is only a small form of typical *A. fruticosa*. The typical *A. angustifolia* according to BOYNTON has elliptic to linear-oblong leaflets which are distinctly acute at both ends. The fruits are as falcate as in *A. fruticosa*. In habit it very much resembles *A. tennessensis*, but that species has more numerous and more approximate leaflets, which are rounded or obtuse at each end. The following specimens seem to me typical *A. angustifolia:* .

TEXAS.—New Braunfels, *Lindheimer*, no. 595; Kerr Co., *Heller*, no. 1596; Dallas Co., *Eggert*, 24. vi. 99 (cf. etiam sub *A. californica*); Mitchell Co., *Eggert*, 8. vi. 00.

INDIAN TERRITORY.—Sapulpa, *Bush*, nos. 70 et 1105.

NEW MEXICO.—Pawnee Fork, *Fendler*, no. 126.

KANSAS.—Manhattan, *Norton*, 9. viii. 92, and also Riley Co., no. 89 (and also no. 89a ?).

IOWA.—Steamboat Rock, *Pammel*, *Hume*, and *Fitz*, no. 1621.

The following specimens seem to be somewhat intermediate between *A angustifolia* and *A. fruticosa* (especially its var. *humilis*, which can be determined clearly only from living specimens!).

MISSOURI.—Taney Co., Forsyth, *Wm. Trelease*, 7. viii. 97.

COLORADO.—Beaver Co., *Redfield*, no. 71 (vel 1365).

SOUTH DAKOTA.—Lake Campbell, *Herb. Luke*, 13. vi. 91.

WYOMING.—Laramie Co., *Nelson*, no. 8657 (forma foliolorum valde variabilis!).

11. A. FRUTICOSA L., Sp. Pl. **2**:713. 1753.—*A. perforata* Schkuhr, Bot. Handb. **2**:333. 1808; *A. elata* Hayne, Dendrol. Fl. 134. 1822; *A. pubescens* Schlecht. Linnaea **34**:691. 1851.

The type of this species is very clearly indicated by Linnaeus in citing "Hort Cliff. p. 353. *tab.* 19," but I have seen only a relatively small numbei of specimens which represent this type. It was collected first by *Catesby* in North Carolina. I distinguish the following varieties, but I believe that such widely distributed forms as *A. angustifolia* and *A. tennessensis* can only be taken for varieties of *A. fruticosa*. Probably also *A. californica* and *A. caroliniana* may be considered as mere geographical varieties of *A. fruticosa*.

Var. TYPICA.—Frutex elata partibus omnibus junioribus sericeo-pubescentibus adultis glabriusculis vel glabris.

NORTH CAROLINA.—Stanley Co., *Small* et *Heller*, no. 380 (a form somewhat intermediate between typical *A. fruticosa* and *A. tennessensis*); loco non indicato, *S. B. Buckley*.

ILLINOIS.—Stark Co., *V. H. Chase*, no. 737; Washington Co., *French*, no. 1362 (forma pube var. *crocealanata* simili).

IOWA.—Ames, *Ball* et *Meeker*, no. 525, et *Hitchcock;* Story City, *Pammel* et *Ball*, no. 1753 (?), 4. vi. 98; Decatur Co., *Anderson*, 9. vi. 01.

MISSOURI.—Jefferson Co., *Eggert*, 5. v. 96; *Dr. O. Krause*, 23. v. 66; St. Louis Co., *Eggert*, 6. v. 75; Webb City, *Bush*, no. 553; Bridgeton, 28. v. 59; Jackson Co., *Bush*, 13. vi. 92.

NEBRASKA.—Saye Creek, *Hayden*, 22. vi. 53; Kearney, *Pammel* et *Brownlee* (?), 27. vi. 99.

KANSAS.—Cowley Co., *Madwhite* (?), iv. 98.

OKLAHOMA.—Stillwater *Waugh*, no. 353 (an var. *humilis* ?).

The following forms are doubtful:

WYOMING.—Fairbanks, *A. Nelson*, no. 337.

ARKANSAS.—Fulton, *Bush*, no. 2451.

ALABAMA.—Monte Sano, *Baker*, 23. v. 97 (glaberrima, foliis iis *A. glabrae* simillimis, sed calycis dentes ut in *A. fruticosa*).

FLORIDA (east).—Indian River, *Palmer*, no. 104 (et 1364) (foliolis ad 39!).

Var. **humilis**, var. nov.—*A. humilis* Tausch, Flora **21**:750. 1838; the following names are also probably synonyms: *A. nonperforata*—Schkuhr, Bot. Handb. **2**:333. 1808; *A. nana* Nutt. Fraser Ctal. 1813, fide Torr. et Gray, et *A. nana* Sims, Bot. Mag. *tab. 2112.* 1820, haud Nutt. 1818; *A. fruticosa* Hayne, Dendrol. Flora 134. 1822, nec Linn.—Frutex humilis, foliis plerisque paullo minoribus saepe angustioribus iis *A. angustifoliae* haud dissimilibus.

As I said above, it is very difficult to decide whether a dried specimen belongs to typical *A. fruticosa* or to this variety or even to *A. angustifolia*, but the original specimens of TAUSCH are certainly not identical with *A. angustifolia*. The latter I never found living in our European gardens. Likewise the dwarf *humilis* everywhere appears within the limits of the type and perhaps only represents a mere "Standortsform."

Var. **crocealanata**, var. nov.—*A. crocealanata* Watson, Dendrol. Britann. **2**: *tab. 139.* 1825; an *A. pumila* Tausch, Dendroth. Bohem. exsicc., nec Michx. ?—Frutex elata omnibus partibus junioribus satis dense flavocanescentibus fere hirsutulis, foliolis etiam adultis superne sparsius subtus densim pubescentibus.

WATSON gives a very good description and drawing of his species, and the following forms agree very well with his characters:

MISSOURI.—Ocean Springs, *Miss Skeban* (?) 8. v. 95.

LOUISIANA.—Alexandria, *C. R. Ball*, no. 422.

ALABAMA.—Mobile, 16. iv (this specimen in the leaves somewhat resembles *A. herbacea*, but the calyx is quite that of *A. fruticosa*).

FLORIDA.—*Herb. Chapm.*, without other indication (this form has the leaflets in part somewhat more broadly elliptical); loco non indicato, *Herb. Chapm.* no. 1345.

Unfortunately all these specimens are in flower or with only very young fruits. It seems to me of great interest that such analagous forms appear in such very different localities.

12. A. VIRGATA Small, Bull. Torr. Bot. Club **21**:17. 1894.—A *georgiana* Small, Mss. in Herb.

GEORGIA.—DeKalb Co., Stone Mt., *Small*, 3 et 17. vii. 93; *Biltm. Herb.* no. 14c, 12. v. et 8. ix. 97; *Eggert*, 17. v. 99 (one of these forms with very large leaflets, 6.5×3.5^{cm}, seems to me very near to *A. nitens* Boynt.) and 22. vii. 97; Cobb Co., *Harper*, no. 226.

NORTH CAROLINA.—Without locality or number, *Ashe* (distributed as *A. georgiana* Small).

FLORIDA.—Lake Co., Eustis, *Hitchcock*, vii. 94; *Nash*, no. 261 (see also the undetermined forms).

A. virgata typica is a species with rather broad ovate or elliptic-ovate leaflets; but there are the following southern forms (from Florida) which differ in smaller, more elliptic-lanceolate leaflets with more cuneate base. I cannot say yet whether they represent a good variety.

GEORGIA.—Gwinnett Co., *Small*, 20. vii. 93.

FLORIDA.—Near Jacksonville, *Curtiss*, no. 6410; Volusia Co., *Curtiss*, no. 6684; Clearwater, *Tracy*, no. 6870; Lemon City, *Tracy*, no. 7726; Lee Co., *Hitchcock*, no. 52.

In Biltm. Bot. Stud. **1**:139. 1902, BOYNTON describes as a new species *A. nitens* from Waynesboro, Georgia. Unfortunately I have no type specimen at hand. It is possible that *A. nitens* is a good but very local species, distinguished by its glossy twigs, its thinner leaflets, and its more falcate nearly glandless legumes; but all these characters are rather slight ones.

I have before me two different specimens which I cannot identify with any other form mentioned here; the first probably may belong to *A. nitens;* the second is a very striking form, most resembling *A. paniculata* (nervis foliolorum subtus elevatis), but the leaflets are rather thin and glabrescent.

TENNESSEE.—Cocke Co., *Kearney*, no. 641 (also somewhat resembles *A. glabra*).

FLORIDA.—Chattahoochee River, *Bush*, no. 13.

13. A. LAEVIGATA Nutt., Torr. et Gray. Fl. N. Am. **1**:306. 1838.

The type was found on the "banks of the Arkansas, near Salt River." The description given by NUTTALL is not clear. He says "leaflets distant, elliptical-oblong, attenuated below;" and also "with large distant and very obtuse leaflets." TORREY and GRAY did not see this species, and it seems to me very difficult to clear it up without an original specimen. The interpretation of *A. laevigata* given by BOYNTON in SMALL'S *Flora* (625) is probably not correct; but if it is, *A. californica* and *A. laevigata* would be very nearly allied!

I myself believe that a specimen collected by an unknown gentleman on the banks of the Little Mamelle River, Arkansas, July 1825, which I found in Herb. Engelmann under no. 1043, with the determination *A. laevigata* Nutt., may be the true species of NUTTALL. Most of the leaflets are large and broad-elliptical with a round or slightly cuneate base. Some leaflets are more "suborbicularia" or more "late ovato-lanceolata." The apex is rounded and "fere semper leviter emarginata." The leaflets are rather thin, but firm and smooth and "fere glaberrima." The small fruits are the same as those of typical *A. texana*.

Another quite glabrous specimen is that which has been collected by *E. Hall*, no. 128, eastern Texas, Creek bank, Houston: foliolis minoribus, ad 3.5×1.8^{cm} magnis, ellipticis, basis subrotundatis vel subcuneatis, apice rotundatis

vel emarginatis, mucronatis; fructibus maturis 5–6^{mm} longis, dorso rectis, satis glanduloso-verrucosis.

Var. PUBESCENS Gray, Pl. Wright. 49. 1852.—*A. fruticosa* var. *subglabra* Gray, Jour. Bost. Soc. Nat. Hist. **6**:174 (the first *subglabra* on this page!) 1850; *A. texana* Buckl. Proc. Philad. Acad. 452. 1861 (sed confer etiam Gray, eod. loco, p. 162. 1862!); *A. subglabra* Heller, Bot. Explor. South Texas 48. 1895.

The type of this variety is the same as *Lindheimer* specimen vi. 47, on a creek near Fredricksburg, Texas; according to my view this is only a variety of *A. laevigata*, if the latter is rightly interpreted above. GRAY (*l. c.*) and HELLER (*l. c.*) state that the true *A. texana* in no way differs from var. *pubescens* (=var. *subglabra* Gray, *l. c.*). I also believe that *Heller's* no. 1772 from Kerr Co., S. Texas, can be best taken as such a variety. There are some more pubescent forms which I name f. **mollis** (=*A. texana* var. *mollis* Boynt. Biltm. Bot. Stud. **1**:139. 1902). To this form belongs a sterile specimen in Herb. Mo. Bot. Gard., with the printed statement "remnants of Buckley's Texas Herb.," and named in BOYNTON's hand "*laevigata pubescens* Gray."

14. A. PANICULATA Torr. et Gray, Fl. N. Am. **1**:306. 1838.—*A. Roemeriana* Scheele, Linnaea **21**:461. 1848.

TEXAS.—Lynchburg, *Lindheimer*, vii. 42 et (loco non indicato) no. 37. (anno 1843); Gladewater, *Reverchon*, no. 2665; Brazos, *Lindheimer*, no. 18 (anno 1843); Anderson Co., *Eggert*, 11. vi. 99; loco non indicato, *Pammel*, vii. 88; *Drummond*, no. 461 (vel. 261), anno 1835; Marshall, *Bush*, no. 991.

I conclude this account with the words of SCHLECHTENDAHL, which seem to me as true today as they were some fifty years ago: "Quae omnia fusius exposimus, ut inde pateat, quanta sit confusio in hoc genere et quam insufficiens status cognitionis nostrae."

VIENNA, AUSTRIA